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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,149	07/16/2003	Brian Roberds	42P12745C	1886

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Michael A. Bernadicou  
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP  
Seventh Floor  
12400 Wilshire Boulevard  
Los Angeles, CA 90025

EXAMINER

SMOOT, STEPHEN W

ART UNIT PAPER NUMBER

2813

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/622,149	<b>Applicant(s)</b> ROBERDS ET AL.	
	<b>Examiner</b> Stephen W. Smoot	<b>Art Unit</b> 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 20 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 20 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7-16-03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This Office action is in response to application papers filed on 16 July 2003, which includes a preliminary amendment that has been entered.

### ***Drawings***

1. Replacement drawing sheets were received on 26 August 2003. The replacement sheet corresponding to Figs. 3-4 is not acceptable for the reason provided below.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign mentioned in the description:

12 in Fig. 3 (see page 6, lines 6-7).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the

Art Unit: 2813

changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities:

Update the first sentence of the specification to indicate that 10/015,107 has issued as US 6,638,835 (see preliminary amendment, page 2);

On page 5, line 14, capitalize SMARTCUT because it is a trademark;

On page 6, line 4, change "gate 14" to --gate 12-- because the gate in the drawings is designated as reference number 12;

On page 6, line 12, delete "1 of about" to correct grammar;

On page 8, line 2, change "360" to --360 nm-- because the thickness units are nm; and

On page 12, line 21, delete the redundant appearance of "second substrate".

Appropriate correction is required.

### ***Claim Objections***

4. Applicant is advised that should claim 4 be found allowable, claim 5 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two

claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

5. Claim 3 is objected to because of the following informality:

In claim 3, line 3, change "that greater" to --greater-- to correct grammar.

Appropriate correction is required.

### ***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,638,835.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-5 of '835 have all of the limitations set forth in claim 1 of the applicant's invention.

Claim 20 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15-16 of U.S. Patent No. 6,638,835. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 15-16 of '835 have all of the limitations set forth in claim 20 of the applicant's invention.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Henley et al. (US 6,149,979 – from applicant's IDS).

Referring to Figs. 4-7, Henley et al. disclose a method for separating a semiconductor layer from a substrate that includes the following features:

- A silicon wafer (10) can optionally have a dielectric layer (19), that can be silicon oxide, formed over its top surface (14) (see column 4, line 59 to column 5, line 6);

Art Unit: 2813

- Particles (48) are implanted through the top surface (14) of the wafer (10) to a selected depth  $z_0$  to define a material region (15) corresponding to the semiconductor layer that will subsequently be removed (see column 5, lines 7-33);
- The implanted wafer (10) is joined to a target wafer (52) (see column 5, lines 35-42);
- In an alternative embodiment the two wafers can be bonded together using an adhesive (54), shown disposed on the target wafer (52) in Fig. 5, that includes polyimide-type materials (see column 6, lines 1-4); and
- The material region (15) is then separated from the wafer (10) using a thermal treatment to form gas bubbles (11) from the implanted particles (see column 6, lines 19-26), during which step the target wafer (52) remains bonded to the material region (15).

These are all of the limitations set forth in claims 1-5 of the applicant's invention.

Regarding claim 3, the disclosure of Henley et al. is silent regarding performing a finishing operation on the silicon oxide dielectric layer (19) implying that the surface is not polished.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 20, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley et al. (US 6,149,979 – from applicant's IDS) in view of Frazier et al. (US 6,136,171 – from applicant's IDS).

Referring to Figs. 4-7, Henley et al. disclose a method for separating a semiconductor layer from a substrate that includes the following features:

- A silicon wafer (10) can optionally have a dielectric layer (19), that can be silicon oxide, formed over its top surface (14) (see column 4, line 59 to column 5, line 6);
- Particles (48) are implanted through the top surface (14) of the wafer (10) to a selected depth  $z_0$  to define a material region (15) corresponding to the semiconductor layer that will subsequently be removed (see column 5, lines 7-33);
- The implanted wafer (10) is joined to a target wafer (52) (see column 5, lines 35-42);
- In an alternative embodiment the two wafers can be bonded together using an adhesive (54), shown disposed on the target wafer (52) in Fig. 5, that includes polyimide-type materials (see column 6, lines 1-4);
- The material region (15) is then separated from the wafer (10) using a thermal treatment to form gas bubbles (11) from the implanted particles (see column 6,



Art Unit: 2813

lines 19-26), during which step the target wafer (52) remains bonded to the material region (15); and

- Additional films may be separated from the wafer (10) by repeating the above process (see column 7, line 49 to column 8, line 62).

These are limitations set forth in claims 20, 23 of the applicant's invention.

However, although the step of reflowing the polymer would be implicit to the bonding step of Henley et al., they do not expressly teach or suggest outgassing the polymer film, which is a limitation of claim 20.

Frazier et al. teach that polyimide material can be cured in order to outgas unreacted monomers, solvents, etc. (see column 8, lines 20-32).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Henley et al. by including a curing step as taught by Frazier et al. in order to remove undesirable contaminants from the polyimide. Frazier et al. recognize that their curing step is effective at removing harmful molecules from the polyimide matrix and unwanted outgassing from the finished product is therefore avoided (see column 8, lines 24-32).

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen W. Smoot whose telephone number is 571-272-1698. The examiner can normally be reached on M-F (8:00 am to 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SWS

*Stephen W. Smoot*

Patent Examiner  
Art Unit 2813